

WHAT IS CLAIMED IS:

- 1 1. An apparatus comprising:
2 a channel decoder (44), responsive to an encoded signal received over
3 a transmission channel (42), for providing a channel decoded signal (46); and
4 an iterative processor (52), responsive to the channel decoded signal
5 (46), for providing a synthesized speech signal (54) meeting typicality
6 standards which vary with channel quality deficiency.
- 1 2. The apparatus defined in claim 1, wherein the iterative processor (52)
2 comprises:
3 a speech decoder with bad frame replacer (70), responsive to the
4 channel-decoded signal (46), for providing the synthesized speech signal (54);
5 and
6 a signal error analyzer (90), responsive to the synthesized speech
7 signal (54) and responsive to the channel decoded signal (46), for providing a
8 characteristics error signal (92) to which the speech decoder with bad frame
9 replacer (70) is responsive, wherein the signal error analyzer (90) applies
10 typicality standards which vary with channel quality deficiency.
- 1 3. The apparatus defined in claim 1, wherein the iterative processor comprises:
2 a speech decoder with bad frame replacer (70), responsive to a speech
3 parameter signal (78) included in the channel-decoded signal (46), and responsive to a
4 bad frame substitution signal (88), for providing the synthesized speech signal (54);
5 a bad frame counter (82), responsive to a reset signal (84) and responsive to a
6 count signal (86), for providing the bad frame substitution signal (88);
7 a signal error analyzer (90), responsive to the channel-decoded signal (46) and
8 responsive to the synthesized speech signal (54), for providing the reset signal, and
9 for providing a characteristics error signal (92); and

10 a logical port (94), responsive to the characteristics error signal (92) and also
11 responsive to a bad frame indicator signal (96) included in the channel decoded signal
12 (46), for providing the count signal (86).

1 4. The apparatus defined in claim 3, wherein the iterative processor (52) further
2 comprises a switch (98), responsive to a switch control signal (100) from the signal
3 error analyzer (90) and also responsive to the synthesized speech signal (54), for
4 selectively providing the synthesized speech signal (54).

1 5. The apparatus defined in claim 3, wherein the iterative processor (52) further
2 comprises a decoder storage (102), responsive to a state signal (104) from the speech
3 decoder with bad frame replacer (70), for providing a state signal (104) back to the
4 speech decoder with bad frame replacer (70).

1 6. The apparatus defined in claim 1, wherein the iterative processor (52) is also
2 directly responsive to the encoded signal received over a transmission channel (42).

1 7. The apparatus defined in claim 1, wherein the apparatus is a mobile
2 communication device.

1 8. The apparatus defined in claim 1, wherein the apparatus is a network element
2 in a wireless communication network.

1 9. The apparatus defined in claim 8, wherein the network element is a base
2 station.

1 10. An apparatus comprising:
2 a channel decoder (44), responsive to an encoded signal received over
3 a transmission channel (42), for providing a channel-decoded signal (46);

an iterative processor (52), responsive to the channel decoded signal (46), for providing a synthesized speech signal (54) and for providing a modification command signal (60); and

a synthesized signal modifier (58), responsive to the synthesized speech signal (54) and to the modification command signal (60), for providing a synthesized output signal (62) meeting typicality standards which vary with channel quality deficiency.

11. The apparatus defined in claim 10, wherein the apparatus is a mobile communication device.

12. The apparatus defined in claim 10, wherein the apparatus is a network element in a wireless communication network.

13. The apparatus defined in claim 12, wherein the network element is a base station.

14. The apparatus defined in claim 10, wherein the iterative processor (52) performs only one iteration, without re-synthesis.

15. The apparatus defined in claim 10, wherein the iterative processor (52) comprises:

a speech decoder with bad frame replacer (70), responsive to the channel-decoded signal (46), for providing the synthesized speech signal (54); and

a signal error analyzer (90), responsive to the synthesized speech signal (54) and responsive to the channel-decoded signal (46), for providing the modification command signal (60).

16. The apparatus defined in claim 15, wherein the iterative processor (52) performs only one iteration, without re-synthesis.

1 17. The apparatus defined in claim 10, wherein the iterative processor (52)
2 comprises:

3 a speech decoder with bad frame replacer (70), responsive to a speech
4 parameter signal (78) included in the channel-decoded signal (46), and responsive to a
5 bad frame substitution signal (26), for providing the synthesized speech signal (54);

6 a bad frame counter (82), responsive to a reset signal (84) and responsive to a
7 count signal (86), for providing the bad frame substitution signal (88);

8 a signal error analyzer (90), responsive to the channel-decoded signal (46) and
9 responsive to the synthesized speech signal (54), for providing the modification
10 command signal (60), for providing the reset signal (84), and for providing a
11 characteristics error signal (92); and

12 a logical port (94), responsive to the characteristics error signal (92) and also
13 responsive to a bad frame indicator signal (96) included in the channel decoded signal
14 (46), for providing the count signal (86).

1 18. The apparatus defined in claim 17, wherein the iterative processor (52) further
2 comprises a switch (98), responsive to a switch control signal (100) from the signal
3 error analyzer (90) and also responsive to the synthesized speech signal (54), for
4 selectively providing the synthesized speech signal (54).

1 19. The apparatus defined in claim 17, wherein the iterative processor (52) further
2 comprises a decoder storage (102), responsive to a state signal (104) from the speech
3 decoder with bad frame replacer (70), for providing a state signal (104) back to the
4 speech decoder with bad frame replacer (70).

1 20. The apparatus defined in claim 17, wherein the iterative processor (52) is also
2 directly responsive to the encoded signal received over a transmission channel (42).

1 21. A method comprising the steps of:
2 providing a channel-decoded signal (46) in response to an encoded signal
3 received over a transmission channel (42); and
4 executing an iterative signal processing step, in response to the channel-
5 decoded signal (46), for providing a synthesized speech signal (54) meeting typicality
6 requirements which vary with channel quality deficiency.

1 22. The method defined in claim 21, wherein the iterative signal processing step
2 comprises the steps of:

3 providing the synthesized speech signal (54) in response to the
4 channel-decoded signal (46); and
5 providing a characteristics error signal (92) responsive to the
6 synthesized speech signal (54) and responsive to the channel-decoded signal
7 (46).

1 23. The method defined in claim 21, wherein the iterative processing step is also
2 executed in direct response to the encoded signal received over a transmission channel
3 (42).

1 24. A method comprising the steps of:
2 providing a channel-decoded signal (46) in response to an encoded signal
3 received over a transmission channel (42);
4 executing an iterative signal processing step, in response to the channel-
5 decoded signal (46), for providing a synthesized speech signal (54) and for providing
6 a modification command signal (60); and
7 providing a synthesized output signal (62) meeting typicality standards which
8 vary with channel quality deficiency, in response to the synthesized speech signal (54)
9 and also in response to the modification command signal (60).

1 25. The method defined in claim 24, wherein the iterative signal processing step is
2 executed only once, without re-synthesis.

1 26. The method defined in claim 24, wherein the iterative signal processing step
2 comprises the steps of:

3 providing the synthesized speech signal (54) in response to the channel-
4 decoded signal (46); and

5 providing the modification command signal (60) in response to the
6 synthesized speech signal (54) and also in response to the channel decoded signal
7 (46).

1 27. The method defined in claim 26, wherein the iterative signal processing step is
2 executed only once, without re-synthesis.

1 28. The method defined in claim 24, wherein the iterative processing step is also
2 executed in direct response to the encoded signal received over a transmission channel
3 (42).

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